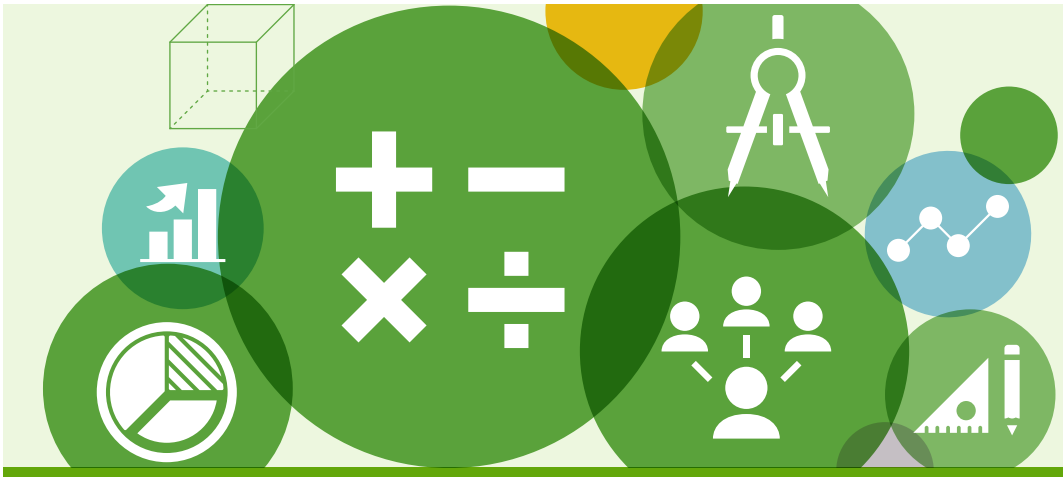


STUDENT VERSION

WHAT IS A STATISTICAL QUESTION?

Activity Items

The following items are part of this activity and appear at the end of this student version.

- Item 1: Radio Set Ownership Map
- Item 2: Map of U.S. Regions and the Land Areas of the 50 U.S. States and District of Columbia

Student Learning Objectives

- I will be able to distinguish between statistical questions and other types of questions.
- I will be able to formulate and answer my own statistical questions, drawing conclusions based on those answers.
- I will be able to understand the concept of variability within a data set.

NAME:_____ DATE:_____

A statistical question is a question that can be answered by collecting data that vary. For example, "How old am I?" is not a statistical question, but "How old are the students in my school?" is a statistical question. This is because to answer the second question, you would need to determine the ages of all students in your school and there would be variability in those data (since not all students are the same age).

Part 1 – Determine If Questions Are Statistical

Imagine you want to find out about the height of students in your class using statistics. Read each question below and decide if it is a statistical question. Then explain your answer.

	Question	Is it statistical? (Yes/No)	Explanation
1	How tall are you?		
2	How tall, in inches, was Marco on his last birthday?		
3	How tall are the students in your class, in centimeters?		
4	Is Preston taller than 60 inches?		

	Question	Is it statistical? (Yes/No)	Explanation
5	How do the heights of the students in your class compare with the heights of all sixth-graders in your school?		
6	How do the heights of the sixth-graders in your school compare with the heights of the seventh-graders in your school?		
7	How do the heights of the sixth-graders in your school compare with the heights of sixth-graders in a school in another country?		

Part 2 – Look at Data and Statistical Questions

1. Review **Item 1: Radio Set Ownership Map**, which shows the percentage of families that owned a radio in each U.S. state in 1930, and record any observations about the data.

2. Determine which questions in the table below are statistical and if they could be answered using the data in **Item 1**. (You don't have to actually find the answers to the questions!)

	Question	Is it statistical? (Yes/No)	Could it be answered with data from Item 1? (Yes/No)	Explanation
1	What percentage of families in Florida had a radio set in 1930?			
2	Which region of the United States had the lowest rates of radio set ownership in 1930?			
3	In 1930, how much did the radio ownership rates for different states vary?			
4	In 1930, why did a greater percentage of families in California own a radio set compared with families in nearby states?			

Part 3 – Write Your Own Statistical Questions

Use **Item 2: Map of U.S. Regions and the Land Areas of the 50 U.S. States and District of Columbia**, where states are listed in order from largest to smallest area, to complete the following prompts:

- Write three statistical questions that you could answer using data from **Item 2**.
- Use data from **Item 2** to actually answer each question.
- Explain how you found each answer.
- Draw a conclusion about what your answer means for the larger data set.
- Write a related question for each of your statistical questions (but don't answer this one).

Example

Question: How do the areas of each of the three states on the West Coast vary?

Answer: Washington = 71,298 square miles; Oregon = 98,379 square miles; California = 163,695 square miles

Explanation: I found these areas by locating each state in the table.

Conclusion: Each of the three states on the West Coast has a different area, ranging from about 71,000 to 164,000 square miles.

Related Question: How do the areas of the states on the West Coast compare with the areas of the states on the East Coast?

Question 1:

Answer:

Explanation:

Conclusion:

Related Question:

Question 2:

Answer:

Explanation:

Conclusion:

Related Question:

Question 3:

Answer:

Explanation:

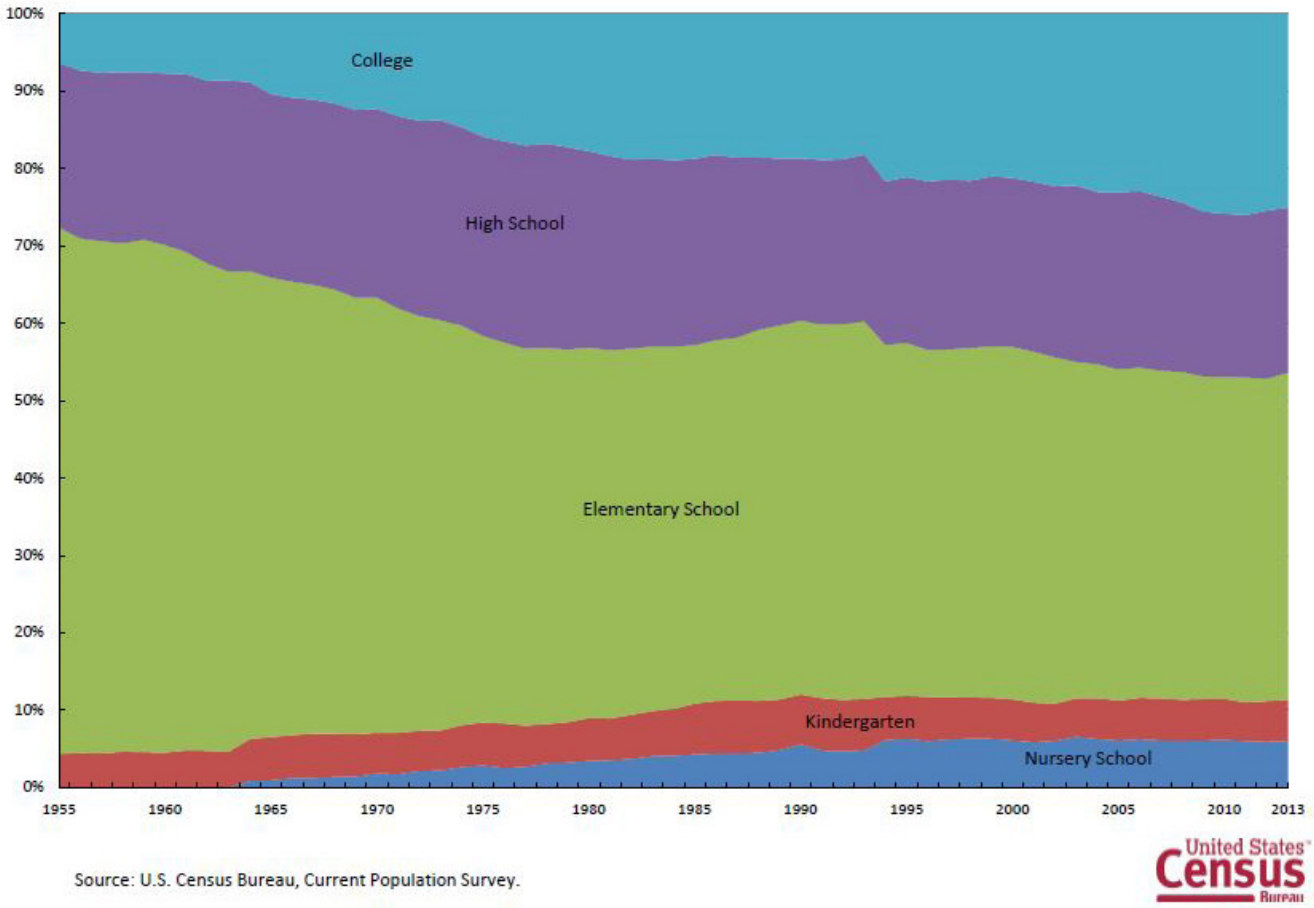
Conclusion:

Related Question:

Part 4 – Draw Conclusions From a Graph (Optional)

The following graph shows the percentages of people aged 3 and older in the United States who were enrolled in school at different levels — ranging from nursery school (pre-K) to college — from 1955 to 2013.

Distribution of School Enrollment of the U.S. Population 3 Years and Older, by Level: 1955 to 2013



www.census.gov/hhes/school/data/cps/historical/FigureA-1_2013.pdf

1. Examine the graph and write down any observations about the data or the graph.

2. Write a statistical question that can be answered using data in the graph, answer your question, explain how you found the answer, and write a concluding statement about your answer:

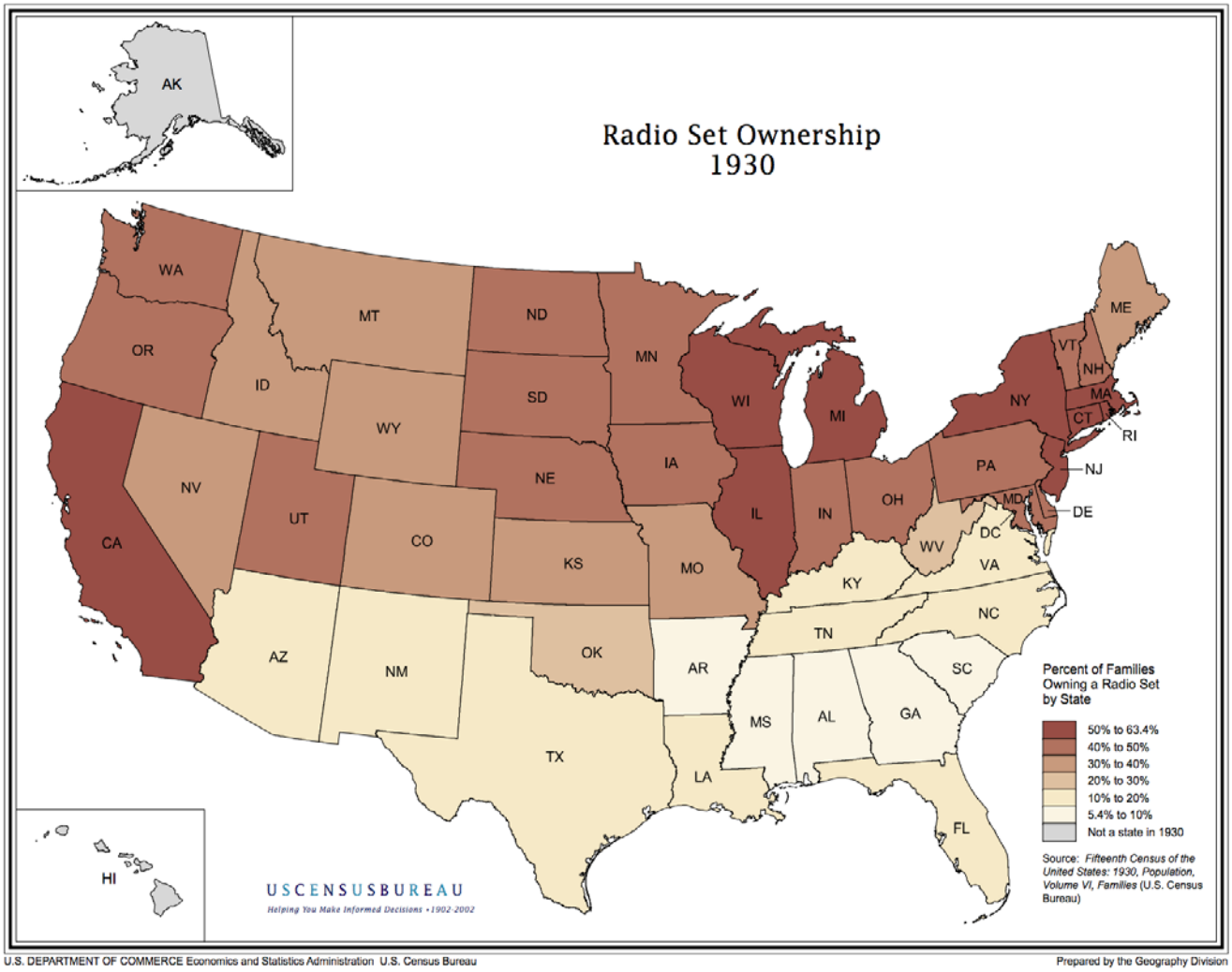
Question:

Answer:

Explanation:

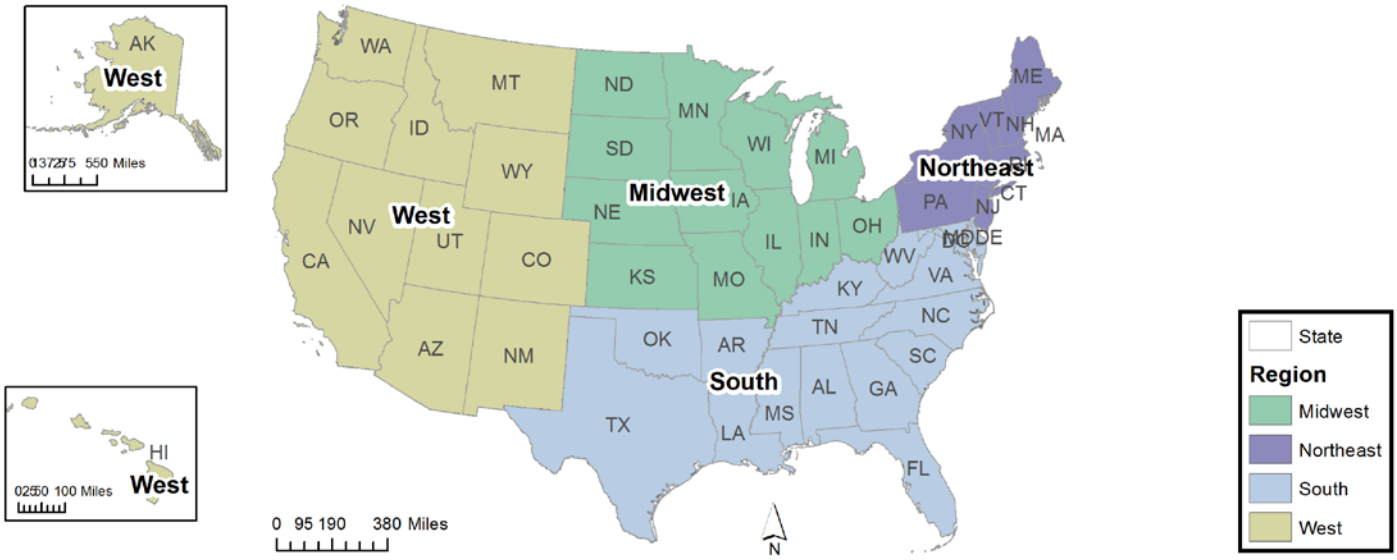
Conclusion:

Item 1: Radio Set Ownership Map



www2.census.gov/geo/pdfs/maps-data/maps/thematic/radios.pdf

Item 2: Map of U.S. Regions and the Land Areas of the 50 U.S. States and District of Columbia



www.census.gov/geo/reference/webatlas/regions.html

Item 2: Map of U.S. Regions and the Land Areas of the 50 U.S. States and District of Columbia (Continued)

State	Area in Square Miles
United States[1]	3,796,742
Alaska	665,384
Texas	268,596
California	163,695
Montana	147,040
New Mexico	121,590
Arizona	113,990
Nevada	110,572
Colorado	104,094
Oregon	98,379
Wyoming	97,813
Michigan	96,714
Minnesota	86,936
Utah	84,897
Idaho	83,569
Kansas	82,278
Nebraska	77,348
South Dakota	77,116
Washington	71,298
North Dakota	70,698
Oklahoma	69,899
Missouri	69,707
Florida	65,758
Wisconsin	65,496
Georgia	59,425
Illinois	57,914

State	Area in Square Miles
Iowa	56,273
New York	54,555
North Carolina	53,819
Arkansas	53,179
Alabama	52,420
Louisiana	52,378
Mississippi	48,432
Pennsylvania	46,054
Ohio	44,826
Virginia	42,775
Tennessee	42,144
Kentucky	40,408
Indiana	36,420
Maine	35,380
South Carolina	32,020
West Virginia	24,230
Maryland	12,406
Hawaii	10,932
Massachusetts	10,554
Vermont	9,616
New Hampshire	9,349
New Jersey	8,723
Connecticut	5,543
Delaware	2,489
Rhode Island	1,545
District of Columbia	68

1 Includes all 50 states and the District of Columbia.

www.census.gov/geo/reference/state-area.html

Click on the link above to view the 2010 source data online.